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| APPLICATION NO.           | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------|-------------|----------------------|---------------------|------------------|
| 09/993,493                | 11/27/2001  | Michael C. Chaffee   | 1043.40721X00       | 5433             |
| 26875                     | 7590        | 12/05/2005           | EXAMINER            |                  |
| WOOD, HERRON & EVANS, LLP |             |                      | SHAH, NILESH R      |                  |
| 2700 CAREW TOWER          |             |                      | ART UNIT            |                  |
| 441 VINE STREET           |             |                      | PAPER NUMBER        |                  |
| CINCINNATI, OH 45202      |             |                      | 2195                |                  |

DATE MAILED: 12/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                       |  |
|------------------------------|--------------------------------------|---------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/993,493 | <b>Applicant(s)</b><br>CHAFFEE ET AL. |  |
|                              | <b>Examiner</b><br>Nilesh Shah       | <b>Art Unit</b><br>2195               |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Claims 1-35 are presented for examination.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reshef et al (6,321,337) (hereinafter Reshef) in view of DeKoning et al (6,823,472) (hereinafter DeKoning).
4. As per claim 1, Reshef teaches the invention substantially as claimed including a system for controlling use of at least one resource comprising:  
  
a plurality of addressable locations in the system(col. 1 lines 59-67; col. 8 lines 46-67; col. 14 lines 40-66; col. 20 lines 13-37);  
  
a communication system connecting the addressable locations which transmits communications between the addressable locations (col. 4 lines 42-65; col. 9 lines 29-45; col. 8 lines 20-35;col. 13 lines 19-26);  
  
a plurality of machines or processes, the machines or processes being located with least one of the addressable locations(col. 1 lines 59-67; col. 8 lines 46-67; col. 12 line 62- col. 13 line 15; col. 9 lines 29-45; col. 8 lines 20-35);

a plurality of control programs operable to request use of the at least one resource, the control programs comprising a plurality of machine or process control programs, each machine or process control program controlling at least one machine or process (col. 8 lines 20-35; col. 15 lines 57-67).

5. Reshef does not specifically teach the use of resources managers.
6. DeKoning teaches a plurality of resource managers, the resource managers being located at a plurality of the addressable locations, each resource manager communicating over the communication system with at least one other resource manager, and the plurality of resource managers arbitrating which control program of the plurality of control programs is given exclusive use of at least one resource during execution of the control program (abstract; col. 4 lines 51-62; col. 6 lines 13-25; col. 8 lines 55-67; col. 10 lines 29-35). It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of DeKoning and Reshef because DeKoning's resource managers would improve Reshef's system by providing allocation of different resources from a central location thus being able to keep track of all resources.
7. As per claim 2, Reshef teaches wherein: the at least one resource is a physical workspace that is at least in part shared by at least two machines (col. 20 lines 13-37).
8. As per claim 3, Reshef teaches wherein: the physical workspace is defined logically (col. 8 lines 46-67).

9. As per claim 4, DeKoning teaches wherein:

the at least one resource is control of an input/output function shared between the machines(col. 5 lines 21-40; col. 4 lines 51-62).

10. As per claim 5, DeKoning teaches wherein:

the at least one resource effects transport of items processed by the machines(col. 5 lines 21-40; col. 4 lines 51-62).

11. As per claim 6, DeKoning teaches wherein:

the at least one resource is control of exchange of tools used by the machines (col. 4 lines 31-63).

12. As per claim 7, DeKoning teaches wherein:

the at least one resource is control of processing performed at processing stations in a manufacturing process(col. 4 lines 31-63).

13. As per claim 8, DeKoning teaches wherein:

the at least one resource is control of a sensor system(col. 4 lines 31-63).

14. As per claim 9, Reshef teaches wherein:

the control program is executed by a computer located at an addressable location in the system (col. 4 lines 42-65; col. 9 lines 29-45; col. 8 lines 20-35;col. 13 lines 19-26).

15. As per claim 10, Reshef teaches wherein:

the computer comprises a general purpose industrial computer(col. 6 lines 40-67).

16. As per claim 11, Reshef teaches wherein:

the computer comprises a personal computer(col. 6 lines 40-67).

17. As per claim 12, Reshef teaches wherein:

the computer comprises a machine controller(col. 6 lines 40-67).

18. As per claim 13, Reshef teaches wherein:

the computer comprises a programmable logic controller(col. 6 lines 40-67).

19. As per claim 14, DeKoning teaches wherein:

at least one resource manager is executed by a computer located at an addressable location in the system (col. 5 lines 21-40; col. 4 lines 51-62).

20. Claims 15-17 are rejected based on the same rejections as claim 10-12 above.

21. As per claim 18, DeKoning teaches wherein:

the control program uses a resource that is controlled locally by a resource manager at the same addressable location as the control program(col. 7 lines 26-44).

22. As per claim 19, DeKoning teaches wherein:

the control program uses a resource that is controlled remotely by a resource manager at an addressable location different from the control program(col. 7 lines 26-44).

23. As per claim 20, DeKoning teaches wherein:

at least one resource comprises a data object (col. 4 lines 31-63).

24. As per claim 21, DeKoning teaches wherein:

a human machine interface, coupled to at least one resource manager, which provides a point of access to the at least one resource manager, to permit establishing of the resources under control of the at least one resource manager, to observe the state of the resources under the control of the at least one resource manager and to modify the state of the resources under the control of the at least one resource manager (col. 5 lines 21-40; col. 4 lines 51-62).

25. As per claim 22, DeKoning teaches wherein:

the human machine interface is local to at least one of the resource managers(col. 5 lines 21-40; col. 4 lines 51-62; col. 7 lines 26-44).

26. As per claim 23, DeKoning teaches wherein:

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the human machine interface has access to at least one resource manager through at least one other resource manager(col. 5 lines 21-40; col. 4 lines 51-62; col. 7 lines 26-44).

27. As per claim 24, DeKoning teaches wherein:

the human machine interface is remote from the at least one of the machines controlled by the at least one resource manager (col. 5 lines 21-40; col. 4 lines 51-62; col. 7 lines 26-44).

28. As per claim 25, DeKoning teaches wherein:

during arbitration, at least one resource manager communicates over the communication system to another resource manager which is associated with at least some of the plurality of control programs (col. 5 lines 45-60).

29. As per claim 26, DeKoning teaches wherein:

each resource manager arbitrates access to a plurality of resources with access to the plurality of resources being in a set order(col. 5 lines 60-67);  
each resource manager tracks each control program requesting control of the resources and in what order(col. 5 lines 60-67); and  
if a control program requests access to at least two resources out of the set order, a warning is issued that a deadlock between the control program requesting access to the at least two resources and another control program is possible (col. 5 lines 45-60).



30. As per claim 27, DeKoning teaches wherein:

the plurality of resource managers collaborate to determine if a set of machine control programs requesting access to a set of resources is found to form a deadlock and then the deadlock state is communicated to the user (col. 5 lines 45-60; col. 6 lines 27-42).

31. As per claim 28, Reshef teaches wherein: the plurality of machines are robots which use a plurality of workspaces which at least in part are located within a mutual workspace (col. 8 lines 46-67).

32. As per claim 29, DeKoning teaches wherein: the control program includes user programmable instructions to the plurality of resource managers to control the state of the at least one resource (col. 8 lines 46-67).

33. As per claim 30, Reshef teaches wherein: the communication system is a wireless system (col. 7 lines 29-65).

34. As per claim 31, Reshef teaches wherein: the communication system is a wire line system (col. 7 lines 29-65).

35. As per claim 32, Reshef teaches wherein: the wire line system is an Ethernet system (col. 7 lines 29-65).

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36. Claims 33 is rejected based on the same rejection as claim 1 above.

37. As per claim 34, Reshef teaches wherein: the instructions are user instructions (col. 10 lines 36-47).

38. Claim 35 is rejection based on the same rejection as claim 1 above.

***Response to Arguments***

39. Applicant's arguments filed 9/9/05 have been fully considered but they are not persuasive.

40. In remarks applicant argues that DeKoning does not teach a plurality of resource managers. DeKoning clearly teaches the use of a plurality of resource managers (abstract; col. 4 lines 51-62; col. 6 lines 13-25; col. 8 lines 55-67; col. 10 lines 29-35). 'A system may advantageously apply a plurality of shared resource managers coupled to a plurality of processors via a common interface bus.' 'The present invention is particularly useful where multiple shared resources are to be utilized by multiple processors.'

***Conclusion***

41. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

42. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

43. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nilesh Shah whose telephone number is (571)272-3771. The examiner can normally be reached on 9-5. Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100

44. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on (571)272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nilesh Shah  
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November 17, 2005